

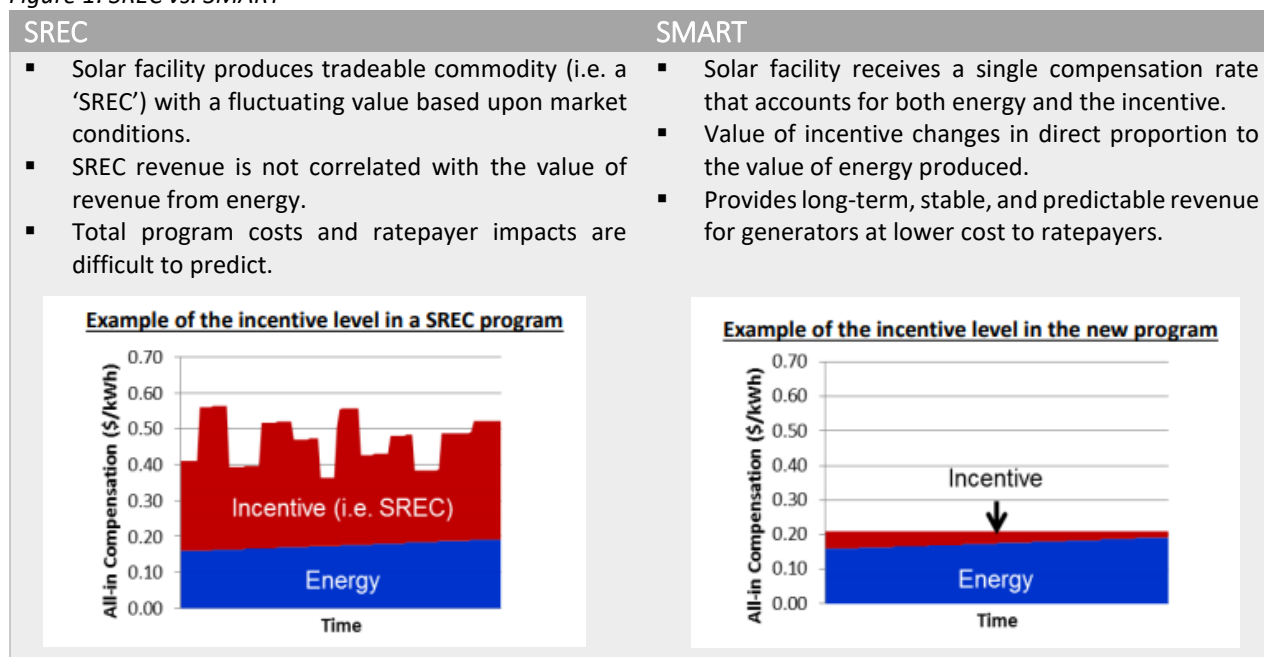
## 1. Program Background

The Solar Massachusetts Renewable Target (SMART) program is a tariff-based incentive program designed to support the installation of an additional 1,600 MW of solar photovoltaic (PV) generation in the Commonwealth. SMART replaces the expiring SREC program – which delivered market tradeable ‘solar renewable energy credits’ (SRECs). In its place, SMART offers long-term stable incentive rates (see Figure 1 for a comparison of the two programs). Once approved by the DPU, the SREC program will no longer be available for new units, but installed units will continue selling their RECs under existing contract terms.

Chapter 75 of the Acts of 2016 established the SMART program, requiring Massachusetts Department of Energy Resources (DOER) to create a new policy supporting a long-term, stable, equitable, and reasonably-priced solar market. Incentives under the SMART program lower over time as the cost of solar decreases and energy prices increase. Compensation varies based upon the system size. As discussed in greater detail in Section 4, additional incentives are also available for:

- Projects under 1 MW in size
- Low to moderate income participants
- Brownfield and landfill projects
- Community solar projects
- Solar tracking systems
- Projects that integrate energy storage

Figure 1: SREC vs. SMART<sup>1</sup>

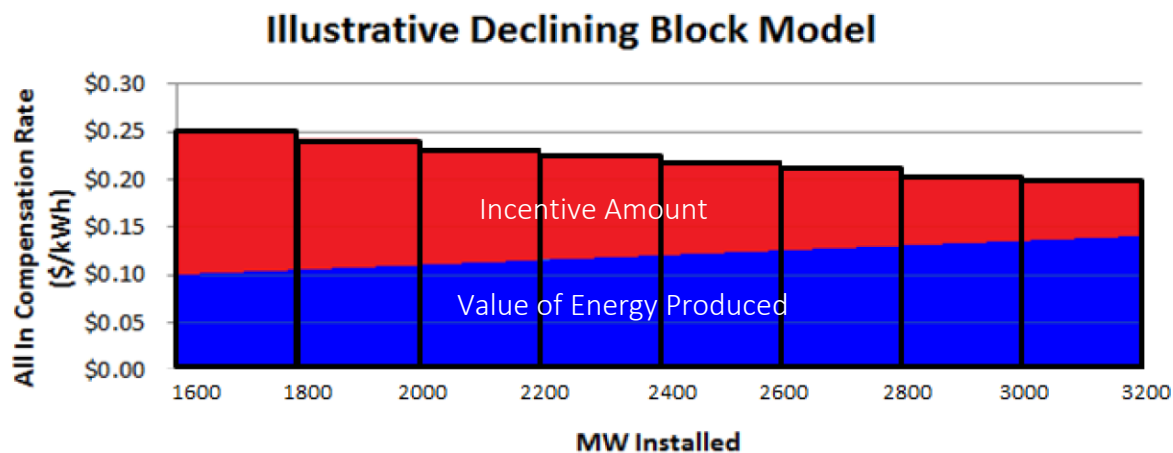


<sup>1</sup> Massachusetts Department of Energy Resources. (2017). *Solar Massachusetts Renewable Target (SMART) Final Program Design*. Retrieved from <http://www.mass.gov/eea/docs/doer/rps-aps/final-program-design-1-31-17.pdf>

## 2. Program Overview

SMART will launch with a competitive auction of 100 MW of solar PV, which will establish a base compensation rate for the remainder of the program. The base compensation rate will vary by utility and will be set at the average price of the winning competitive bids in each utility territory. Following the opening auction, SMART will be administered as a declining block program with the base compensation rate decreasing 4% as each capacity block is filled (see Figure 2 below for an example illustration).

Figure 2: Example Illustration of Declining Block Model<sup>2</sup>



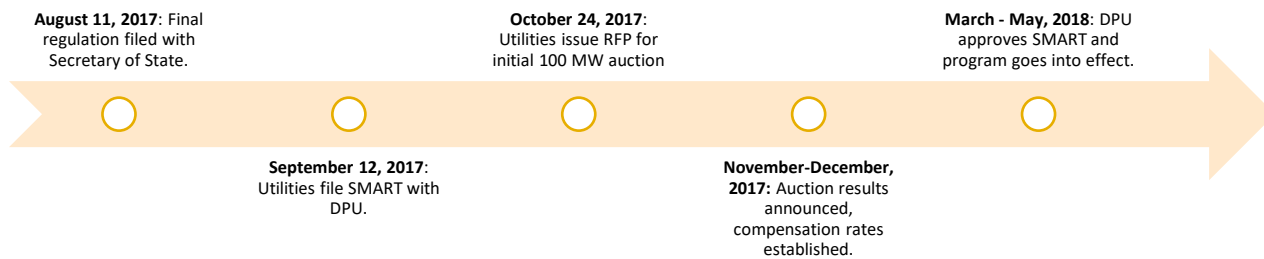
Each distribution utility will have equally sized capacity blocks based on the size of their service area. ‘Adder’ incentives based on the location, off-takers, use of energy storage, and use of trackers can be applied to projects in addition to the base compensation rate (see Section 4). The tariff-based payments will run over 20 years for large projects (over 25 kW) and 10 years for small projects (under 25 kW).

## 3. Process and Timeline

On August 11<sup>th</sup>, 2017, DOER filed the final SMART regulation with the Secretary of State after a 90-day public hearing and comment period on the proposed regulation. On September 12, 2017, the utilities formally filed the SMART provision with the Department of Public Utilities (DPU), initiating DPU proceedings, which are expected to take a minimum of six months. The program specifications may still change during the DPU process.

While SMART is under DPU review, the utilities must formally issue RFPs for the Block 1 auction by October 24<sup>th</sup>, 2017 to set the base compensation rate. Assuming DPU approves SMART, the program is expected to go into effect in between March and May of 2018 (see Figure 3 for timeline details). As the SMART program is awaiting DPU approval, DOER has bridged the gap between the two programs by authorizing a SREC “good cause” extension using reduced factor rates.

<sup>2</sup> Massachusetts Department of Energy Resources. (2017). *Solar Massachusetts Renewable Target (SMART) Final Program Design*. Retrieved from <http://www.mass.gov/eea/docs/doer/rps-aps/final-program-design-1-31-17.pdf>



## 4. Program Features

**Projects smaller than 1 MW receive an initial base compensation rate based upon system size.**

This initial base compensation rate is set by multiplying the base compensation rate (determined in the 100 MW auction) by a capacity-based multiplying factor. For example, if the base compensation rate is \$0.15 per kWh and a project is below 25 kW, a 200% factor is applied and the initial base compensation rate is set at \$0.30 per kWh. Table 1 summarizes the capacity-based compensation factors. For each 200 MW capacity block, a minimum of 25% and a maximum of 35% of capacity is reserved for projects below 25 kW.

*Table 1: Capacity-Based Compensation Rates*

Generation Unit Capacity	Base Compensation Rate Factor
Low Income less than or equal to 25 kW	230%
Less than or equal to 25 kW	200%
25 kW to 250 kW	150%
250 kW to 500 kW	125%
500 kW to 1,000 kW	110%

**SMART uses “adders” to incentivize projects based upon location, off-takers, and use of select technologies.**

To drive development toward policy goals, projects are eligible for compensation adders applied after the capacity-based compensation has been set. These adders encourage improved project siting, grid modernization, community and low-income benefits, and solar unit efficiency. Each adder value will decline 4% for every “tranche,” or capacity installed under that adder. The first tranche will be 80 MW per adder, and the DPU will establish the sizes of additional tranches as they are filled. Table 2 summarizes all available compensation rate adders.

Table 2: Compensation Rate Adders

## 1. Location Adders

Unit Type	Value (\$/kWh)
Building-Mounted	\$0.02
Floating Solar	\$0.03
Brownfield	\$0.03
Eligible Landfill	\$0.06
Canopy	\$0.06
Agricultural	\$0.06

## 2. Off-Taker Adders

Unit Type	Value (\$/kWh)
Community Shared	\$0.05
Low Income	\$0.03
Community Shared and Low Income	\$0.06
Public Entity	\$0.02

## 3. Energy Storage Adder\*

Unit Type	Value (\$/kWh)
Energy Storage	\$0.0247 – \$0.0763

\*varies with capacity and discharge duration

## 4. Solar Tracking Adder

Unit Type	Value (\$/kWh)
Solar Tracking	\$0.01

Projects below 25 kW are only eligible for the Energy Storage Adder, but projects above 25 kW can “stack” one adder from each of the four categories. Figure 4 illustrates how a project that is installed as a solar canopy and serves a public entity would stack adders to receive a higher compensation rate.

Figure 4: Stacking SMART Adders<sup>3</sup>

To further guide project development, SMART also applies a “greenfield” subtractor of \$0.0005 per kWh per acre occupied by the solar development. Projects larger than 500 kW sited on land that has not been previously developed and is zoned for commercial or industrial use incur the “subtractor”.

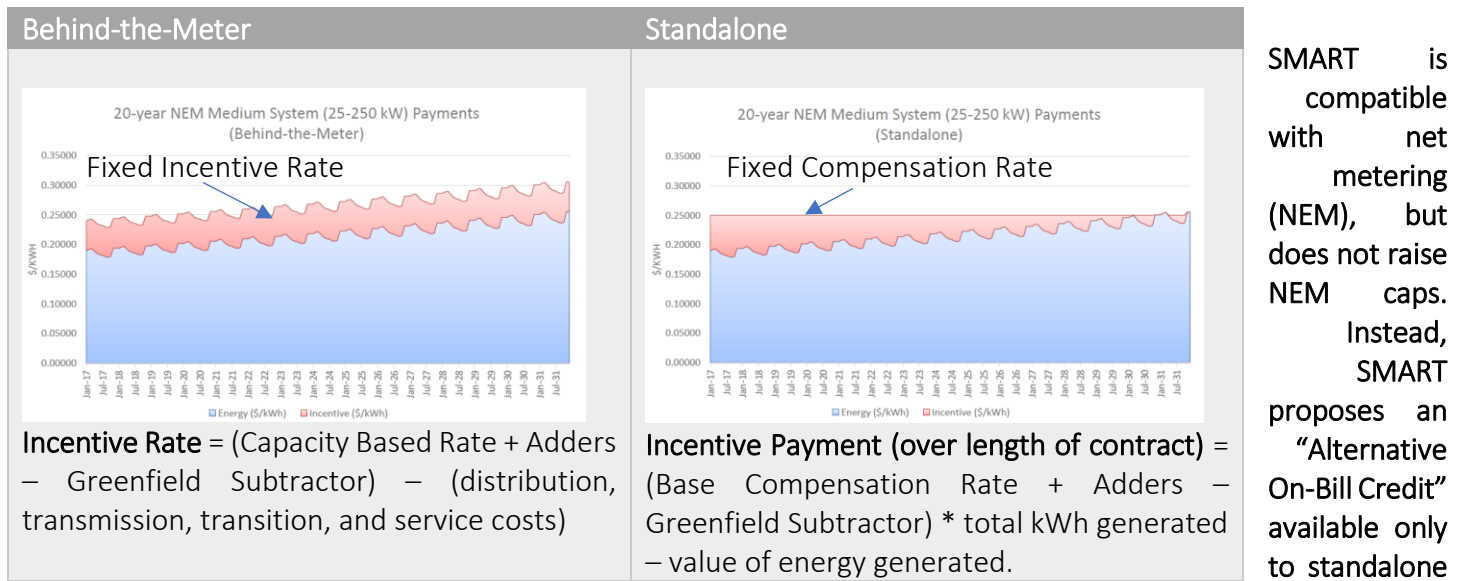
**Final incentive is calculated differently for standalone and behind-the-meter projects.**

<sup>3</sup> Wade, Adam. (2017, February 1). DOER Presents Final Program Design for Solar Massachusetts Renewable Target (“SMART”) Anticipated for January 2018 and Extension of SREC II Program for Approximately One Year [Web log post]. Retrieved from <http://www.energycleantechcounsel.com/2017/02/01/doer-presents-final-program-design-for-solar-massachusetts-renewable-target-smart-anticipated-for-january-2018-and-extension-of-srec-ii-program-for-approximately-one-year/>

Standalone facilities – those with no onsite load – receive set compensation rates that include both the incentive and the value of the energy produced. Therefore, while the compensation rate is fixed throughout the term of the contract, the incentive rate will vary as energy value changes. The energy value is calculated either through net metering, a qualifying facility rate, or a new alternative on bill credit rate (see more below).

In contrast, behind-the-meter facilities receive a fixed incentive rate that is determined at the start of the project. To calculate this incentive, SMART subtracts the costs associated with distribution, transmission, and service (which average \$0.18 per kWh for an average National Grid customer) from the compensation rate set through capacity and adders. For example, if a project's compensation rate after the capacity multiplier and adders is \$0.30 per kWh, the incentive per kWh produced is set at  $\$0.30 - \$0.18 = \$0.12$  per kWh. Table 3 illustrates the different incentive payment structures for standalone versus behind-the-meter projects.

Table 3: Incentive Calculation Methodologies<sup>4</sup>



units.

The SMART program does not change the caps or rates of the NEM credit mechanism. All SMART participants (other than the 100MW approved in the initial procurement auction) will be eligible for NEM in areas where caps have not been reached. Projects smaller than 25 kW remain exempt from caps.

To provide a crediting construct outside of NEM, SMART proposes an “Alternative On-Bill Credit” mechanism. This credit is only available to standalone units participating in the SMART program and has no cap. The Alternative On-Bill Credit functions similarly to NEM, with participants receiving credits on their electricity bill for excess electricity generated. While NEM rates are calculated by a formula, the Alternative On-Bill Credits will accrue at the Basic Service rate applicable for each billing period. Importantly, credits may be allocated to other customer accounts within the utility's service territory through a formal process.

The Alternative On-Bill Credit increases access to the SMART program by enabling standalone units to accrue and allocate credits even in territories where NEM caps are reached. This credit enables projects such as community

<sup>4</sup> Massachusetts Department of Energy Resources. (2017). *Solar Massachusetts Renewable Target (SMART) Final Program Design*. Retrieved from <http://www.mass.gov/eea/docs/doer/rps-aps/final-program-design-1-31-17.pdf>

solar because it provides a method for credits to be calculated and allocated to participating member's electric bills.

**Program costs will be divided proportionally among distribution companies.**

To ensure equal cost burden, the program's costs will be divided among the utilities based on their total share of MA electricity sales. The large distribution companies (National Grid and Eversource) will offer eight blocks with a 4% decrease in incentives per block. The smaller distribution companies (Unitil and Nantucket) may opt to offer fewer than eight blocks with proportional incentive decreases (e.g. four blocks with an 8% incentive decrease per block). Utilities will set their base compensation individually based upon their portfolio of projects selected in the initial auction, which means that compensation for comparable projects will vary depending upon utility.

## 5. Program Implications

**SMART is not available in towns served by municipally-owned electric utilities.**

The program is only offered by investor owned utilities (IOUs), which means that towns serviced by municipal light plants (MLPs) are not eligible for SMART. This is a change from SREC-II, which was available to both IOUs and MLPs. A complete list of MLPs is available [here](#).

**The program includes a variety of adders relevant to municipalities, including incentives for public entity, landfill, low income, and community solar projects.**

SMART incentivizes solar projects on public land through a \$0.02 per kWh adder for units sited on property owned by a government entity. Projects are eligible for this adder if the solar units are owned and operated by the government entity that owns the land *or* if the units assign 100% of their output to a government entity. Additionally, landfill, low income, and community solar adders may be applicable to municipalities considering solar projects.

**Total incentive amount for small projects may be lower for SMART than for SREC-II.**

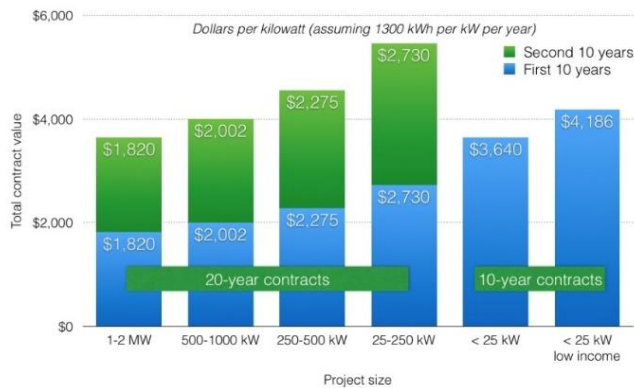
While SMART provides revenue stability, the overall compensation provided by the program is likely to be lower than under the SREC-II program. One analysis of the payment values of a typical 8 kW residential system estimates that the SREC income is around \$19,000, while the SMART contract value is \$10,400 (both over a 10-year term), a 45% decrease in total contract value.

**Smaller projects have higher compensation rates per kWh, but lower total contract value.**

SMART calculates an initial compensation rate based upon unit capacity, with smaller projects receiving higher capacity-based compensation rates than larger projects. However, projects smaller than 25 kW have 10-year contracts, while projects larger than 25 kW have 20-year contracts. This means that although small projects are compensated at a higher rate, larger projects accrue more value per kilowatt of capacity over the length of their contracts. When taking both compensation rate and contract length into account, projects that install 25 – 500 kW of capacity are expected to be the most valuable. Figure 5 compares contract value per kW for projects of different sizes.



## MASS. SMART TARIFF CONTRACT VALUE



## 6. Stakeholder Reactions

Utilities, advocates, and DOER have wrestled with a number of design features over the course of the regulatory process. Key points of debate included the following:

### Concerns regarding the rate of decline of incentive payments and its impact on market growth.

The overall incentive for new units is expected to be lower under SMART than it was for SREC-II and will decline at 4% per capacity block. Some intervenors argued that the smaller incentive adjusts for the declining cost of solar PV and is offset by the financial security of fixed compensation rates, which will lower solar financing soft costs. Others suggested that the rate of decline of incentives may excessively slow the rate of market growth in Massachusetts, and inhibit community and low-income solar projects. Notably, solar advocates argued that the 4% decrease in incentives per block will adjust incentives faster than the rate of PV cost declines, and that a more accurate decline would be from 1.5-3%. On the other hand, utilities argued that the incentives are sufficient to support a sustainable and equitable solar market while fulfilling the directorate to create a reasonably priced program.

### The structure of the first auction and its impacts on compensation rates over the course of the program.

The design of the initial auction was a contentious aspect of the initial proposal. Utilities advocated against a proposed “clearing price,” which would have set the base compensation rate for all utilities at the highest accepted bidding price in the initial auction. Utilities also sought a larger capacity target (200 MW instead of 100 MW) to create a more competitive pool and possibly lower the base compensation rate – and thus cost of the program. Some utilities also argued that there should be a competitive price-setting process in stages throughout the program, instead of using one rate for the duration of the program. Solar advocates, on the other hand, were concerned that the competitive auction would set the initial price too low to incentivize solar, and some advocated for a “floor” price. Stakeholders ultimately agreed to the final program design, which set the base

<sup>5</sup> Wade, Adam. (2017, February 1). DOER Presents Final Program Design for Solar Massachusetts Renewable Target (“SMART”) Anticipated for January 2018 and Extension of SREC II Program for Approximately One Year [Web log post]. Retrieved from <http://www.energycleantechcounsel.com/2017/02/01/doer-presents-final-program-design-for-solar-massachusetts-renewable-target-smart-anticipated-for-january-2018-and-extension-of-srec-ii-program-for-approximately-one-year/>

compensation rate at the average of all accepted initial bids within each utility territory and raised the ceiling base compensation rate from \$0.15 to \$0.17 per kWh.

### **The impacts of the adders on the overall cost and availability of the program.**

Utilities contended that certain adders offered in the program are either excessive or unnecessary. In particular, utilities argued that building-mounted solar (e.g. rooftop solar) is low-impact and cost-effective, and thus should not require extra incentives (adders). Utilities also argued for the reduction of community and low-income solar adders and took a position against the solar tracking adder. Solar advocates, on the other hand, argued that the adders are vital to expand the market for certain solar projects, especially low-income solar. They also advocated against a proposed 320 MW cap on each adder because it would generate uncertainty for solar projects implemented close to the cap limit, as adders could become unavailable. Solar advocates also argued that adders should remain constant and not decline at 4% per capacity block. In the final program design, DOER removed the 320 MW cap on adders and reduced the capacity allotted to each adder before incentive decline. Initially, adders were designed to decrease by 4% for every 200 MW installed, now they decrease by 4% after the first 80 MW installed, with subsequent declines reevaluated at that time.

## **7. Further Reading**

Durrenberger, Mark (2017, March 15). From SREC to SMART: How Massachusetts Solar Incentives are Changing. Retrieved from <https://newenglandcleanenergy.com/energymiser/2017/03/15/from-srec-to-smart-how-massachusetts-solar-incentives-are-changing/>

[This blog post compares incentives for a residential unit offered under the SREC-II program to projected incentives for the proposed SMART program. In doing so, it provides an example of how to calculate incentives under the SMART program.]

Wade, Adam. (2017, February 1). DOER Presents Final Program Design for Solar Massachusetts Renewable Target ("SMART") Anticipated for January 2018 and Extension of SREC II Program for Approximately One Year [Web log post]. Retrieved from <http://www.energycleantechcounsel.com/2017/02/01/doer-presents-final-program-design-for-solar-massachusetts-renewable-target-smart-anticipated-for-january-2018-and-extension-of-srec-ii-program-for-approximately-one-year/>

[Wade provides an overview and analysis of the initial SMART proposal (a slightly different version than the final program) that is helpful for understanding the various components of the program. He also summarizes the SREC-II extension rates briefly.]

Farrell, John. (2017, September 14). The New 1,600 Megawatt Solar Program for Massachusetts Really is SMART [Web log post]. Retrieved from <https://cleantechnica.com/2017/09/14/new-1600-megawatt-solar-program-massachusetts-really-smart/>

[Farrell provides an analysis of the program structure with graphics that are helpful for understanding the program and its implications.]

Massachusetts Department of Energy Resources. (2017). *Solar Massachusetts Renewable Target (SMART) Final Program Design*. Retrieved from <http://www.mass.gov/eea/docs/doer/rps-aps/final-program-design-1-31-17.pdf>

[DOER's initial Powerpoint presentation of the program design, released in January, 2017. This presentation is highly detailed and has useful graphics for understanding the program's structure compared to SREC.]



SolSmart Technical Assistance Memo

**Category:** Community Engagement, Utility Engagement, Planning and Zoning, and Development Regulations



Massachusetts Leading by Example Program. (2017). *Solar Massachusetts Renewable Target: Informational Webinar for Public Entities*. Retrieved from <http://www.mass.gov/eea/docs/doer/green-communities/pubs-reports/3-24-17-solar-massachusetts-renewable-target-q-and-a.pdf>

[Text from a very helpful question and answer webinar conducted on March 24, 2017. The answers are helpful for answering specific questions about program intent and features such as the Alternative On-Bill Credit Mechanism. Some program details have changed from those described in this document.]

Solar Massachusetts Renewable Target (SMART) Program, 225 CMR 20.00 (2017). Retrieved from <http://www.mass.gov/courts/docs/lawlib/220-229cmr/225cmr20.pdf>

[Final SMART regulation as proposed by DOER.]

Trabish, Herman. (2017, March 17). SMART Start? Massachusetts utilities, solar at odds over proposed incentive program. Retrieved from <http://www.utilitydive.com/news/smart-start-massachusetts-utilities-solar-at-odds-over-proposed-incentive/437408/>

[Trabish provides an overview of different stakeholder's perspectives on the program, summarizing utility and solar advocate positions on the most contentious program aspects.]